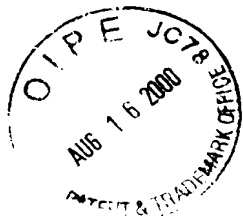




INVESTOR IN PEOPLE

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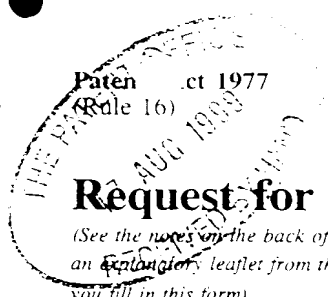
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**Request for grant of a patent**

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
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1. Your reference	JIM/LJ/P2265 GB		
2. Patent application number <i>(The Patent Office will fill in this part)</i>	<b>9919487.0</b>		
3. Full name, address and postcode of the or of each applicant <i>(underline all surnames)</i>	SOCIÉTÉ DES PRODUITS NESTLÉ SA CASE POSTAL 353 CH-1800 VEVEY SWITZERLAND		
Patents ADP number <i>(if you know it)</i>			
If the applicant is a corporate body, give the country/state of its incorporation	SWITZERLAND		
4. Title of the invention	MOULDED CONFECTIONERY PRODUCT COMPRISING VEGETABLES		
5. Name of your agent <i>(if you have one)</i>	ELKINGTON AND FIFE		
"Address for service" in the United Kingdom to which all correspondence should be sent <i>(including the postcode)</i>	ELKINGTON AND FIFE PROSPECT HOUSE 8 PEMBROKE ROAD SEVENOAKS KENT TN13 1XF		
Patents ADP number <i>(if you know it)</i>	67004		
6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or each of these earlier applications and <i>(if you know it)</i> the or each application number	Country	Priority application number <i>(if you know it)</i>	Date of Filing <i>(day month year)</i>
7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application	Number of earlier application		Date of Filing <i>(day month year)</i>

# Patents Form 1/77

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer "Yes" if:
- YES
- a) any applicant named in part 3 is not an inventor, or  
b) there is an inventor who is not named as an applicant, or  
c) any named applicant is a corporate body.

See note (d))

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	-
Description	19
Claim(s)	4
Abstract	1
Drawing(s)	3

10. If you are also filing any of the following, state how many against each item.

Priority documents	-
Translations of priority documents	-
Statement of inventorship and right to grant of a patent (Patents Form 7/77)	3
Request for preliminary examination and search (Patents Form 9/77)	1
Request for substantive examination (Patents Form 10/77)	-
Any other documents (please specify)	-

11. I/We request the grant of a patent on the basis of this application.

Signature

Date

17 August 1999

12. Name and daytime telephone number of person to contact in the United Kingdom

Mr J I MARCHANT  
01732 458881

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This application relates to a nutritious and shelf stable confectionery product having a perceived high nutritional value with a controlled texture and a flavour of a confectionery or close to a confectionery. More particularly, the invention relates to a bar-shaped, wafer-based, biscuit-based or moulded chocolate confectionery products.

In the food, the vegetables are perceived as to provide a high nutritional value with all the essential nutrients such as vitamins, fibres and minerals which are necessary to a balanced and regular food diet. The children are often very reluctant to consume raw or cooked vegetables, whose taste and texture appears to them to be much less attractive compared to other types of food. Therefore, the children are the most prone to essential nutrients deficiency because of their attitude toward the vegetables.

EP 0 461 605 A1 relates to a method for manufacturing a health snack food in which a vegetable, fruit, bean or seaweed are used in a large amount as ingredients. The snack food comprises vegetable, fruit, beans or seaweed paste having a low moisture content and a saccharide content ranging from 5 to 35 % by weight. However, the final product is not very attractive and has a poor texture. It is relatively dry which makes it difficult to chew and swallow, especially for children. This means that the product cannot be viewed as a confectionery product.

Therefore, there is a need to manufacture a new highly nutritional and good tasting confectionery product, which can be easily chewed and which has a relatively high nutritional value.

In particular, an object is to produce a vegetable-based nutritional food which is attractive in taste, texture and/or colour particularly for children.

5 Another object is to produce a vegetable-based nutritional food as an alternative to fresh vegetables for children.

To this end, the present invention relates to a confectionery product with at least a part of which comprises  
10 of a non-cereal vegetable component and a fat-based component, wherein, the non-cereal vegetable component is present in an amount of at least 15 % by weight of the total weight confectionery product and the non-cereal vegetable component and the fat-based component are mixed or physically  
15 combined together in an amount sufficient to provide a shaped product having a texture of confectionery.

Ideally, the non-cereal vegetable component is present in an amount of 30 to 60% by weight so that a significant nutritional value is given to the final confectionery product  
20 which can satisfy both the craving for sweet and serve as a valuable adjunct to the daily nutritional intake of an individual, and more particularly to a child.

The fat-based phase can be mainly used either to fix the shape of the vegetable component or to structurally modify  
25 the natural texture of the vegetable which, in the amount as above-defined, can be transformed in a confectionery product such as a chocolate confectionery product or similar. The non-cereal vegetable component is used as one of the main components so as to give the dominant nutritional  
30 characteristics to the product. The flavour of vegetable can also be dominant provided it is not overshadowed by the remaining ingredients. The flavour of vegetable may or may not be dominant.

In an embodiment, the fat-based component and the non-cereal vegetable component are homogeneously mixed together  
35 in the portion so that a distinctive confectionery texture is achieved thereby. Therefore, the mixture can be shaped and set into a wide variety of forms and various configurations. The mixture can be used alone or can also form only a part of

5 a more complex confectionery with multi-portions or layers  
all combined together.

In another embodiment, the fat-based component is used  
externally to help to shape the vegetable component. In  
particular, the non-cereal vegetable component forms the  
10 centre filling and the fat-based component surrounds the non-  
cereal vegetable component in the portion. In that case, the  
fat-based component maintains the mass of the vegetable  
component and prevents it from breaking up or leaking out of  
the confectionery. The external shape of the confectionery is  
15 mainly given by the fat-based component which is capable of  
being moulded or deposited or extruded by any suitable known  
method of the art.

In the present context, the expression "non-cereal  
vegetable" may be understood as designating all types of  
20 usual vegetables excluding the group of cereals usually used  
in the confectionery domain to make cereals bars such as  
wheat, oat, soy bean, rye, corn, sorghum, millet, in flour,  
grains or germs. The "non-cereal vegetable" component also  
excludes vegetable oil formulations such as soy bean, corn  
25 oil, sunflower oil, olive oil, sesame oil, palm oil, seed  
oil, and other oleaginous products, as well as, vegetable  
shortenings or margarine.

More positively, the non-cereal vegetable component of  
the invention is selected from the group consisting of  
30 potatoes, beans, lentils, peas, asparagus, aubergine, basil,  
beetroot, broccoli, Brussel sprout, cabbage, carrots,  
cauliflower, celery, chicory, courgette, cucumber, curly  
kale, fennel, garlic, gherkins, gourd, leeks, lettuce,  
marrow, mushrooms, okra, onions, parsnip, peppers, plantain,  
35 pumpkin, quorn, radish, spinach, spring greens, swede,  
sweetcorn, tomato, turnip, watercress, yam, zucchini, and any  
mixture thereof. The composition, description and the main  
data sources of the vegetables can be found in "The  
Composition Of Foods", Fifth Edition, by McCance and  
40 Widdowson, Copyright of the Royal Society of Chemistry and

5 Ministry of Agriculture, Fisheries and Food, p. 223-271, the description of which is inserted by reference herewith.

The non-cereal vegetable component is taken from vegetable dried pieces or vegetable dried powder, vegetable distillate or concentrate, vegetable paste or mixtures  
10 thereof. In the context of the invention, the vegetable paste or the vegetable distillate or concentrate have a vegetable solids of at least 60% by weight of the paste, distillate or concentrate.

The fat-based component is present in at least 25 % by  
15 weight in the total product. Preferably, the fat-based component represents from 30 to 70 % by weight of the total product. It is preferred that the ratio of Non-cereal vegetable : Fat-based component is an amount by weight of 1:2 to 5:3. Sufficient fat is necessary to properly agglomerate  
20 the vegetable phase and allow the product to be shaped as desired or connected to other compounds. When the fat amount is too low relative to the vegetable component, the confectionery texture cannot be properly attained. In some cases, the fat base allows to obtain a confectionery texture  
25 of chocolate or similar to chocolate with a good snap and gloss effect. In some cases, the fat phase can also permit to the portion of the confectionery to be aerated so as to achieve creamy or foamy textures at a desired overrun level. Vegetable fat mousse may so be obtained as a major ingredient  
30 of the confectionery. When the fat amount is too high, a waxy texture is obtained which is not suitable as it would confer an unpleasant mouthfeel and the confectionery would be difficult to chew.

In a preferred embodiment of the invention, the fat-based  
35 component is chosen among cocoa butter, vegetable oil or fat, or butter fat, full cream milk solids, or a compound thereof. Chocolate is the preferred source of fat according to the invention as it increases the children acceptance when combined to vegetables. The fat-based component can also  
40 contain flavouring and/or colouring agents such as cocoa, vanilla, caramel, peppermint, fruit, yoghurt, vegetables



5   flavouring agents, and so on. For example, the fat-based  
component can be coloured or flavoured so as to reinforce the  
natural colour or flavour of the vegetable. On the contrary,  
the natural flavour of the vegetable component can be hidden  
by a proper amount of other flavour, for example, when the  
10   confectionery is intended to be eaten by children.

      In an embodiment, the portion of the confectionery  
product further comprises a cereal-based component. For  
example, the cereal-based component can be chosen among a  
list consisting of corn (other than sweet corn), oats, wheat,  
15   barley, rye, rice, millet, malt and a mixture thereof. The  
cereal-based component provides a crispier texture that  
compensates the chewy texture of the vegetable compound.  
Therefore, the amount of cereal will deeply depend upon the  
desired degree of crispiness and lightness of the  
20   confectionery. The cereal-based component also permits to  
control the specific gravity of the final texture as the  
cereal has a relatively low density compared to the non-  
cereal vegetable component. An amount up to 40% by weight of  
cereal-based component is desired. An excess of cereals mix  
25   is to be avoided as it would make the confectionery portion  
dry and crumbly and it would also reduce the beneficial  
organolectic influence of the non-cereal vegetable which  
would need to be protected in the confectionery.

      In general, an amount of added sugar is necessary to  
30   achieve the final texture and taste of the confectionery.  
The added sugar can be selected amount the list consisting of  
glucose, lactose, fructose, sucrose, maltose, dextrose,  
polydextrose, maltodextrin, inverted sugar, a product of  
enzymatic saccharification of starch, and mixture thereof.  
35   The sugar can be icing sugar, crystal sugar, syrup, etc..  
Sugar helps to reduce the waxy texture of the fat phase in  
the confectionery. It also controls the degree of sweetness  
and can also serve to partly mask the vegetable flavour when  
desired, as for instance, when it is necessary to increase  
40   the degree of acceptance to children. The added sugar is  
generally present in an amount of 6 % to 15 % by weight of

5 the product. A maximum amount of 55% of sugar is desired. Invert sugar may be preferred in certain circumstances as it works as a binder between dry and wet phases. It is also preferably used to lower the water activity of the confectionery. However, other ingredients such as polyols  
10 (glycerol, sorbitol, mannitol, and xylitol) can be used alone or in conjunction with the inverted sugar to achieve the water activity level. The use of polyhydric alcohols gives the advantage to keep the sugar content of the confectionery in lower reasonable limits. A lower water activity will  
15 ensure a longer shelf life of the product. Preferably, the confectionery of the invention has a water activity lower than or equal to 0.65, preferably, about 0.35. At this lower value, the expected shelf life is no less than 9 months.

The vegetable-based portion of the confectionery can also  
20 comprise milk concentrate or milk powder in suitable amounts to change the structure and/or mouthfeel of the product.

The confectionery of the invention encompasses the bar-shaped multi-layered confectionery, wafer confectionery, biscuit confectionery and the moulded chocolate bars, slabs,  
25 clusters or rochers containing a non-cereal vegetable filled centre. The vegetable-based portion can be used in several different manners, preferably as a structural arrangement as a core, interleaving layer or surface layer of the confectionery. Fruit-based layers can be interposed as  
30 intermediate layers between two vegetable-based layers, or vice-versa. In order to give a sufficient nutritional and/or organoleptic influence and perception to the confectionery, the vegetable-based portion, either mixed or as a substantially pure paste, will usually have a size as a  
35 component having generally its main dimensions all in excess of 3 mm, and preferably 5 mm.

FIG. 1 shows a multi-layered vegetable and cereal bar partly coated with chocolate as a first embodiment of the invention corresponding to following example 1.

5        FIG. 2 shows a vegetable centre filled wafer tube as a second variant corresponding to following example 2.

FIG. 3 shows a vegetable centre filled and chocolate moulded cluster or bar as a third variant of the invention corresponding to following example 3.

10       FIG. 4 shows a vegetable and fat confectionery crisp as a fourth variant of the invention corresponding to following specific example 4 and 5.

FIG. 5 shows in exploded perspective view a confectionery product of vegetable and fat shell and filling as a fifth  
15       variant of the invention corresponding to following example 6.

FIG. 6 shows a perspective view of the confectionery product of FIG. 6.

The multi-layered bar-shaped assembly of FIG. 1 comprises  
20       a first portion 10 made of a mixture of non-cereal vegetable and fat-based component, preferably chocolate fat (e.g. cocoa butter) or equivalent fat. Optionally, an amount of cereal-based component can be added to lighten the structure of the first portion such as small pieces of cereal grains or  
25       flakes. A second portion 11 of aerated mixture of non-cereal vegetable component, milk-based component and optionally, added sugar component is adhered to the first portion. The combination of a crispy vegetable and cereal layer and a creamy interior vegetable layer very surprising provides a  
30       balanced mouthfeel to the confectionery. Optionally, a vegetable-based paste consisting of at least 60% of vegetable solids, forming a third layer 12, is set adjacent the second portion. Finally, a fat-based coating 13, preferably a chocolate-based layer, partly enrobes the bottom surface of  
35       the third portion and the side surfaces of the multi-layered vegetable assembly so as to form a homogeneous bar protected from rancidity. Of course, other possible alternatives can be envisioned where the layers 10, 11 and 12 are combined at least two by two in all possible combinations.

5       The tubular-shaped assembly of FIG. 2 comprises a relatively thick sugar-based wafer tube 20 of about 80mm-long in which is filled a centre 21 made of a vegetable-based portion and 2mm-thick as previously defined. The cohesion of the vegetable is of less importance than in the previous  
10       example, as the wafer tube prevents the vegetable-based portion from breaking up. However, a certain amount of fat contained in ingredients such as chocolate or other fat such as added vegetable- or animal fat has proved to be necessary to reach an acceptable level of confectionery. Technically,  
15       the vegetable-based product with fat can be so more easily pumped into the interior of the wafer. In an alternative, the wafer element could be replaced by any suitable type of biscuit.

FIG. 3 illustrates another variant in which the  
20       vegetable-based component forms the centre 31 of a fat-based coating of sufficient stiffness and thickness to retain the shape of the confectionery and avoid spilling or breaking of the vegetable-based component. For example, the outer coating 30 can be a dark, milk or white chocolate moulded material.  
25       The centre can be a vegetable paste, distillate or concentrate. In an alternative, the centre 31 can also be an aerated or plain vegetable and fat-based mixture. In another alternative, the centre can be a vegetable and sugar mixture with or without fat.

30       In the followings examples specific preferred embodiments are disclosed utilising the combinations that have previously been described. It will be understood that other mixtures including fruits, nuts, grains, vegetables or any combinations of these ingredients may also be used and as  
35       such, are intended to be within the scope of this invention.

FIG. 4 illustrates another possible embodiment of the invention where vegetable and fat confectionery crisps can be obtained. The crisps are obtainable by roasting of pure or reconstituted vegetable flakes which are homogeneously mixed  
40       to a suitable amount of fat, preferably chocolate fat such as cocoa butter or a tempering vegetable fat.

5 In FIG. 5, the confectionery product is a solid vegetable  
and fat shell comprising an aerated vegetable and fat  
filling. The shell comprises a fat which can be tempered to  
form a suitable level of crystallisation of the shell. Fat  
crystallisation promotes a good snap and a gloss effect to  
10 the shell. Cocoa butter or a vegetable fat having similar  
chemical and physical characteristics to cocoa butter can be  
used. The vegetable fat are generally known as "cocoa butter  
equivalents" (CBEs) or substitute fats. Details in CBEs are  
given in literature reference "Industrial Chocolate  
15 Manufacture And Use", Second Edition, by S. T. Beckett. Cocoa  
butter will give an attractive chocolate taste whereas a CBE  
will be more neutral. The shell is produced by a method  
similar to the one used for making chocolate shells using a  
standard shell forming equipment. The process generally  
20 consists in filling a mould, shaking, forming the shell by  
turning the mould upside down, oscillating and vibrating the  
mould to remove the deposited excess. The filling is then  
deposited into the hollow open cavity by suitable depositing  
means. Bottoming is carried out with the same material as the  
25 shell until final cooling. Then, demoulding is carried out.

30 EXAMPLE 1 - Cereal and vegetable bar partly coated with  
chocolate

TABLE 1

1.A. CEREAL AND VEGETABLE WASH	% BY WEIGHT*
Puffed cereals (6 cereals)	0.72
Corn Flakes	2.39
Freeze-dried sweet corn	2.30
Freeze dried broccoli pieces (10 mm)	0.86

Strawberry pieces (5-10 mm)	0.86
Chocolate	8.63
Cocoa butter	2.30
<u>Subtotal</u>	18.07

5 \* Percent by weight/Total weight of the full recipe

10 The corn flakes were chopped to small pieces of 2-5 mm. The vegetable pieces and strawberries were also cut with a knife into little pieces of 2-5 mm. All the ingredients were then mixed. The chocolate and cocoa butter were melted while stirring. Then, the mixed ingredients were blended with the fat-based compound.

Table 2

1.B. BASE MIX:	% BY WEIGHT*
Icing sugar	4.05
Skim milk powder	4.05
Vegetable fat (Whipping fat)	3.01
Dextrose mono-hydrate	1.16
<u>Sub-total</u>	12.26

15

20 The whipping fat was melted and then added to the other ingredients. These were blended using a Hobart mixer. Then, a three-cylinder roller mill was used to refine the base mix.

Table 3

1.C. SWEET CORN AERATED CREAM	% BY WEIGHT*
Base mix (1.b.)	12.26
Vegetable fat	3.92

Freeze-dried sweet corn	4.90
<u>Subtotal</u>	21.08

5

The dried sweet corn was added into the refined base mix. Further grinding was carried out in a three-cylinder roll refiner. Then, non-melted vegetable fat was added to the refined mix and further mixing was carried out using a Hobart mixer.

The mix was aerated up to density of 0.9 using a Morton pressure mixer. The aeration was achieved after 30 seconds at a speed of 150 rpm/min. Aeration was conducted at 1.5 bars for 4 min. 30 sec.

Table 4

1.D. SWEET CORN FILLING AND COATING	% BY WEIGHT*
Sweet corn paste	36.14
Plain dark milk chocolate	24.70
<u>Sub-total</u>	60.84

\* Percent by weight/Total weight of the full recipe

The vegetable and cereal bar was assembled as follows:

A first layer of sweet corn paste was deposited between 4-mm laths. A second layer of sweet corn aerated cream (1.c. of Table 3) was deposited between second 4-mm laths. On top of the cream layer, a layer of vegetable and cereal wash (1.a. of Table 1) was deposited between third 4-mm laths and was left to set. Plain dark milk chocolate was melted and used to prebase the bar. The bar was cut to 80X25 mm using a knife.

The finished bar weighted 33.2 grams and had the following ingredients and proportions given in table 5.

Table 5

INGREDIENTS	WGT IN G	WGT IN %
-------------	----------	----------

30

Vegetable and cereal wash	6.00	13.07
Sweet corn aerated cream	7.00	21.08
Sweet corn paste	12.00	36.14
Dark milk chocolate	8.20	24.70
<u>Total:</u>	33.20	100.00

5

EXAMPLE 2 - Vegetable filled wafer tube

Table 6

2.A. SWEET CORN/CARROT BASE:	% BY WEIGHT*
Sweet corn paste	10.83
Carrot paste	24.36
Vegetable fat	24.36
Invert sugar	6.77
Glycerol	1.35
Lecithin	0.41
<u>Subtotal:</u>	54.33

10 \* Percent by weight/Total weight of the full recipe

15 The invert sugar was mixed with glycerol in a Hobart mixer. Sweet corn and carrot paste were added and mixed to the invert sugar and glycerol. Lecithin was then added. Vegetable fat was then added and mixed in the Hobart mixer.



Table 7

2.B. VEGETABLE FILLING:	% BY WEIGHT*
Sweet corn base (2.a.)	54.33
Green and white leek flakes	4.06
Mixed pepper granules	4.06
Whole Sweet corn	3.38
Carrot $\frac{1}{4}$ diced	3.38
Tomato/Basil grains	4.06
<u>Subtotal</u>	73.50

\* Percent by weight/Total weight of the full recipe

The carrot pieces were dipped in the invert sugar from  
 10 mix 2.a. of Table 6. Then, the vegetable and the sweet/corn  
 base were added while stirring carefully.

The vegetable filling so obtained was used to fill a  
 thick sugar wafer tube using a piping bag.

The finished filled wafer tube weighted 20 grams and had  
 15 the following ingredients and proportions given in table 8.

Table 8

INGREDIENTS	WGT IN G	WGT IN %
Sugar wafer tube 20X80	5.30	26.50
Vegetable filling	14.70	73.50
<u>Total:</u>	20.0	100.00

EXAMPLE 3 - Moulded chocolate bar with vegetable filling

Table 9

3.1. COLOURED CHOCOLATE:	% BY WEIGHT*
White chocolate	62.75
Cocoa butter	3.76
Colour B Carroten E160	0.16
<u>Subtotal:</u>	66.67

5

The cocoa butter and white chocolate were added together and mixed in a Hobart mixer. The colorant was then added and mixed.

Table 10

3.2. SWEET CORN FILLING:	% BY WEIGHT*
Sweet corn paste	33.33
<u>Subtotal:</u>	33.33

10

The coloured chocolate was tempered and then moulded with the appropriate mould while leaving an open cavity by emptying. After setting, the sweet corn paste (3.2 of Table 10) was poured to fill the cavity. A seal of coloured chocolate was then added on the bottom of the confectionery.

15

The finished product weighted 30 grams and had the ingredients given in table 11.

Table 11

INGREDIENTS	WT IN G	WT IN %
Coloured chocolate (coating)	15.00	50.00
Sweet corn filling	10.00	33.33
Coloured chocolate (bottom)	5.00	16.67
<u>Total:</u>	30.00	100.00

EXAMPLE 4 - Sweet potato crisps

A roasted sweet potato fat product in a crisp shape is produced from a base mix comprising the ingredients of Table 12.

Table 12

4.1 BASE MIX	WT IN G	WT IN % <sup>2</sup>
Roasted sweet potato flakes	300	56.24
Vegetable fat <sup>1</sup>	150	28.12
Sugar	25	4.69
Salt	5	0.94
<u>Sub-Total</u>	480	89.99

<sup>(1)</sup> Illexao 30/69 (Equivalent cocoa butter)

<sup>(2)</sup> % by weight of the full recipe

15

The sweet potato flakes are roasted to a desired degree in an oven at 200°C without using ventilation. Then, the roasted flakes are cooled down and the other ingredients are added. The combination is mixed in a Hobart mixer and then refined using a three rolls refiner.

20

The potato fat base is further prepared with the base mix from the ingredients of table 13 which follows.

Table 13

4.2 - POTATO CHOCOLATE	GRAMS	% BY WEIGHT
Base mix of 4.1.	480	89.99
Vegetable fat <sup>1</sup>	50	9.37
Lecithin	3.40	0.64
Total	533	100.00

25

<sup>1</sup> Illexao 30/69 (Equivalent cocoa butter)

The cocoa butter is mixed until it fully melts in a Hobart mixer. The refined mix (4.1) is added to the melted cocoa butter and the combination is mixed in the Hobart mixer during about one hour. At the end of mixing, the lecithin is added and mixing is maintained during about 10 minutes.

Then assembling is carried out as follows. The potato fat base, as obtained, is tempered like a regular chocolate. It must be noted that the vegetable fat used is a tempering vegetable fat having similar characteristics to the cocoa butter. The tempering ensures the developement of stable crystals in the fat. It provides a good snap and a gloss effect in the final product in a manner similar to a chocolate crisp. The tempering consists in lowering the temperature to a seeding temperature of about 26-27°C, then, the temperature is increased to 29-30°C. Addition of lecithin may slightly lower the seeding temperature.

The tempered base is deposited on a perforated rubber belt with a plurality of oval apertures resting flat on a table. Before the compound hardens, the flat crisps are disposed on curved moulds to have the final crisp shape set.

Crisps of potato and fat are obtained that weigh each about 4 grams. The crisps have a salted and potato taste but a good texture very similar to a chocolate product with a good snap and gloss.

30

#### EXAMPLE 5 - Sweet potato and chocolate crisps

The same type of product is prepared as in Example 4 except that the vegetable fat is replaced by cocoa butter in about the same proportion as the vegetable fat and the amount of salt is slightly reduced. The final product has about the same good snap and gloss but the taste is closer to chocolate and the potato taste is a bit hidden by the chocolate taste.

40 EXAMPLE 6 - Sweet potato chocolate shell and buttered potato filling

5        A straight line of sweet potato chocolates is manufactured. The chocolates comprise a buttered potato filling in moulded potato compound shells.

      A base mixture is prepared from the ingredients of table 14 which follows.

10        Table 14

5.1. BASE MIX	GRAMS	% BY WEIGHT
Roasted sweet potato flakes	300	28.12
Cocoa butter	150	14.06
Sugar	25	2.34
Salt	5	0.47
<u>Subtotal</u>	480	44.99

(\* % By weight of the full recipe)

      The same preparation as for the base mix of Example 4 is carried out.

15        The shell is then prepared using the ingredients of table 15.

Table 15

5.2. POTATO CHOCOLATE	GRAMS	% BY WEIGHT*
Base mix	480	44.99
Cocoa butter	50	4.69
Lecithin	3.4	0.32
<u>Subtotal</u>	533	50.00

(\* % by weight of the full recipe)

20

      The same preparation of the potato chocolate as in Example 4 or 5 is carried out.

- 5 Separately, the filling is prepared comprising a base mix with the ingredients of table 16.

Table 16

5.3. FILLING BASE MIX	GRAMS	% BY WEIGHT*
Icing sugar	1750	11.31
Skim milk powder	1750	11.31
Vegetable whipping fat	1300	8.4
Dextrose mono-hydrate	500	3.23
<u>Sub-total</u>	5300	34.25

(\* % by weight of the full recipe)

10

The filling base mixture is prepared by melting the whipping fat and adding the other ingredients to the melted fat. The mixing is carried out in a Hobart mixer and refined using a three rolls refiner.

- 15 The filling base mix is used to prepare the buttered potato filling having the ingredients reported in table 17.

Table 17

5.4. BUTTERED POTATO FILLING	GRAMS	% BY WEIGHT*
Base mix	120	34.25
Icing sugar	20	5.71
Vegetable whipping fat	19.98	9.99
Buttered potato flavour	0.17	0.05
<u>Subtotal</u>	175.17	50.00

(\* % by weight of the full recipe)

5       The vegetable fat when still solid (not melted) and the  
other ingredients are added into the refined base mixture and  
a suitable level of mixing is performed using a Hobart mixer  
for 30 seconds at speed 150 rpm/min. Then, the mixture is  
10 aerated up to a density of 0.9 using a Morton pressure mixer  
at a pressure of about 1.5 bar for 4 minutes and 30 seconds.

The assembling of the potato chocolate shell and aerated  
potato filling is then carried out. For that, the potato  
compound is tempered like a regular chocolate and then  
moulded to make shells. The shells are then left to set.  
15 Then, an amount of filling of buttered potato is deposited  
into the shells using a piping bag. The shells are further  
sealed with the potato chocolate base so as to make the  
bottoms of the shells. The confectionery is allowed to cool  
down and is then demoulded. The weight and proportions of the  
20 confectionery are reported in table 18.

Table 18

INGREDIENTS	GRAMS	% BY WEIGHT
Potato shell	3.4	34.00
Buttered filling	5.00	50.00
Potato back-off	1.6	16.00
<u>Total:</u>	10.00	100.00

The final confectionery product looks like a straight  
line of chocolates; each single one having a diameter of 2.7  
25 mm, a height of 2.2 mm and a weight of 10 grams. The  
confectionery product has a taste close to chocolate.

Claims:

1. A confectionery product with at least a part of which comprises a non-cereal vegetable component and a fat-based component, wherein, the non-cereal vegetable component is present in an amount of at least 15 % by weight of the total confectionery product and the non-cereal vegetable component and the fat-based component are mixed or physically combined together so as to provide a shaped product having a texture of confectionery.
2. A confectionery product according to claim 1, wherein the non-cereal vegetable component is present in an amount ranging from 30 to 60 % by weight of the total confectionery product.
3. A confectionery product according to claim 1, wherein the fat-based component and the non-cereal vegetable component are homogeneously mixed together so that a distinctive confection texture is achieved thereby.
4. A confectionery product according to claim 1, wherein the non-cereal vegetable component forms the centre filling and the fat-based component surrounds the non-cereal vegetable component.
5. A confectionery product according to any of claims 1 to 3, wherein the non-cereal vegetable component comprises dried vegetable pieces, dried vegetable powder, vegetable paste or vegetable distillate or concentrate or a mixture thereof.
6. A confectionery product according to any of claims 1 to 4, wherein the non-cereal vegetable component is selected from the group consisting of potatoes, beans, lentils, peas, asparagus, aubergine, basil, beetroot,



5           broccoli,       Brussel    sprout,       cabbage,       carrots,  
cauliflower,   celery,   chicory,   courgette,   cucumber,  
curly kale,   fennel,   garlic,   gherkins,   gourd,   leeks,  
lettuce,   marrow,   mushrooms,   okra,   onions,   parsnip,  
10           peppers,   plantain,   pumpkin,   quorn,   radish,   spinach,  
spring greens,   swede,   sweetcorn,   tomato,   turnip,  
watercress,   yam,   zucchini,   and any mixture thereof.

7.       A confectionery product according to any of the  
preceding claims wherein the fat-based component  
15       comprises at least 25 % by weight of the product.

8.       A confectionery product according to any of the  
preceding claims wherein the ratio non-cereal vegetable  
: fat-based component is in an amount of 1:2 to 5:3  
20

9.       A confectionery product according to claim 7 or 8  
wherein, it includes chocolate.

10.      A confectionery product according to any of claims  
25       7 to 9 wherein, the fat-based is cocoa butter,  
vegetable oil or fat, or butter fat, or a compound  
thereof.

11.      A confectionery product according to any of the  
30       preceding claims wherein, the portion further comprises  
a cereal-based component.

12.      A confectionery product according to claim 11,  
wherein the cereal-based component comprises up to 40%  
35       by weight in the product.

13.      A confectionery product according to claim 11 or  
12, wherein the cereal-based component is selected from  
the group consisting of corn, oats, wheat, barley, rye,  
40       rice, millet, malt and a mixture thereof.

- 5        14.        A confectionery product according to any of the  
preceding claims, wherein the mixture comprises added  
sugar component.
- 10       15.        A confectionery product according to claim 14,  
wherein the added sugar-based component is present in  
an amount up to 55% by weight in the product.
- 15       16.        A confectionery product according to claim 14 or  
15, wherein the added sugar component is selected from  
the group of glucose, lactose, fructose, sucrose,  
maltose, dextrose, polydextrose, maltodextrin, inverted  
sugar, a product of enzymatic saccharification of  
starch, and mixture thereof.
- 20       17.        A confectionery product according to any of the  
preceding claims, wherein it comprises  
a first portion comprising a mixture of non-  
cereal vegetable component and a fat-based component  
and,  
25       a second portion comprising an aerated mixture of  
a non-cereal vegetable component and a milk-based and  
optionally added sugar component, the two portions  
being positioned adjacent one another in a set  
configuration.
- 30       18.        A confectionery product according to claim 17,  
wherein the first portion further comprises a cereal-  
based component.
- 35       19.        A confectionery product according to claim 17 or  
18, wherein it further comprises a third portion of a  
non-cereal vegetable paste; the third portion being  
adjacent to the second portion.
- 40       20.        A confectionery product according to any of claims  
17, 18 or 19, wherein the portions are at least partly  
enrobed with a fat-based layer.

- 5            21.        A confectionery product according to claim 20,  
             wherein the fat-based layer is a chocolate-based layer.
22.        A confectionery product according to any of claims  
             1 to 16, wherein the product has the general shape of a  
10           bar, slab, rocher, cluster or crisp.
23.        A confectionery product according to claim 22,  
             wherein the product comprises roasted vegetable mixed  
             to tempering fat.
- 15           24.        A confectionery product according to claim 22,  
             wherein the product is non-cereal vegetable and fat  
             shell with a filling comprising a non-cereal vegetable  
             component.
- 20           25.        A confectionery product according to claim 24,  
             wherein the shell comprises a fat adapted to cause  
             stable crystallisation when tempered such as cocoa  
             butter or cocoa butter equivalent.
- 25           26.        A confectionery product according to any of claims  
             1 to 16, wherein the non-cereal vegetable component is  
             arranged adjacent to a wafer element or a biscuit  
             element.
- 30           27.        A confectionery product according to claim 26,  
             wherein the wafer or biscuit element is a tube, a boat-  
             shaped element or a plate-like element.

Abstract

The invention relates to a new nutritional food product attractive in taste, texture and/or colour, particularly, for children. The food product comprises at least a part having a non-cereal vegetable component and a fat-based component. The non-cereal vegetable component is present in an amount of at least 15 % by weight of the total food product and the non-cereal vegetable component and the fat-based component are mixed or physically combined together so as to provide a shaped product having the texture of confectionery.

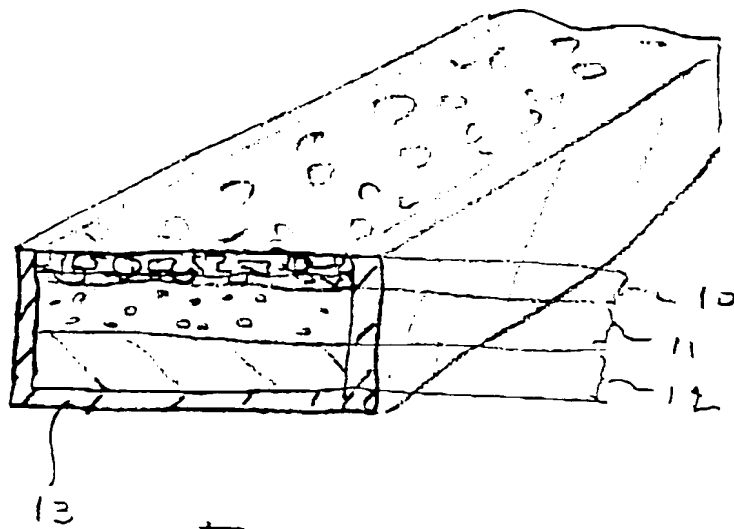


Fig 1.

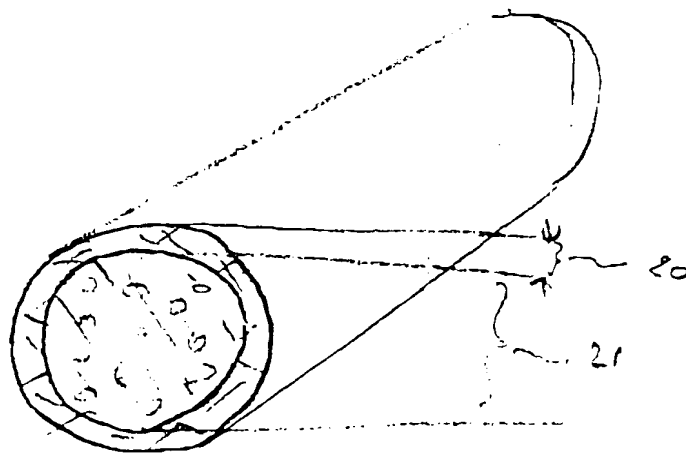


FIG 2



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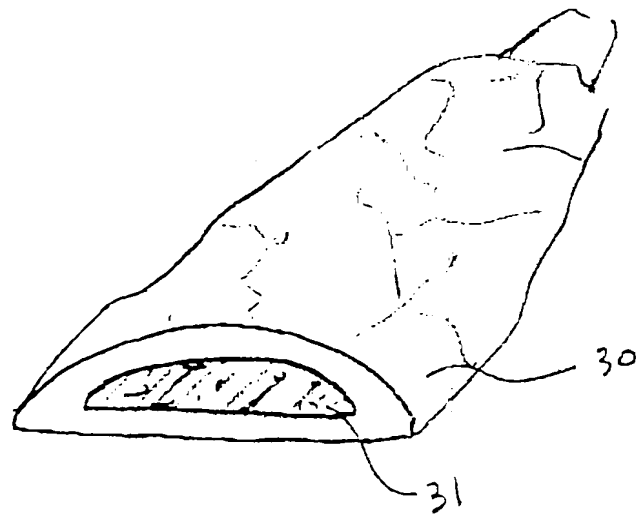


FIG. 3

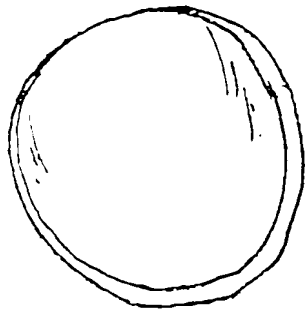
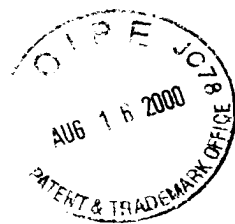


FIG 4.



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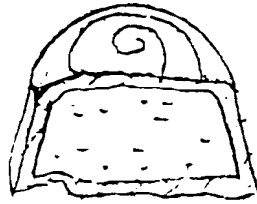


Fig. 5



Fig. 6



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